

EXPLORATION LABORATORY ANALYSIS

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ABSTRACT

The Exploration Laboratory Analysis (ELA) project supports the Exploration Medical Capability (ExMC) risk to minimize or reduce the risk of adverse health outcomes and decrements in performance due to in-flight medical capabilities on human exploration missions. To mitigate this risk, the availability of inflight laboratory analysis instrumentation has been identified as an essential capability for manned exploration missions. Since a single, compact space-ready laboratory analysis capability to perform all exploration clinical measurements is not commercially available, the ELA project objective is to demonstrate the feasibility of emerging operational and analytical capability as a biomedical diagnostics precursor to long duration manned exploration missions.

The initial step towards ground and flight demonstrations in fiscal year (FY) 2015 was the downselection of platform technologies for demonstrations in the space environment. The technologies selected included two Small Business Innovation Research (SBIR) performers: DNA Medicine Institute's rHEALTH X and Intelligent Optical System's later flow assays combined with Holomic's smartphone analyzer. The selection of these technologies were based on their compact size, breadth of analytical capability and favorable ability to process fluids in a space environment, among several factors. These two technologies will be advanced to meet ground and flight demonstration success criteria and requirements. The technology demonstrations and metrics for success will be finalized in FY16. Also, the downselected performers will continue the technology development phase towards meeting prototype deliverables in either late 2016 or 2017.